



## Current State of Cigarette Fires in the US: Data Analysis and Workshop

### Background

Smoking was the leading cause of home fire deaths in the United States for the five-year period of 2012-2016. Overall, one of every 31 home smoking material fires resulted in death. During this five-year period, an estimated annual average of 18,100 (5%) reported home structure fires started by smoking materials killed an average of 590 (23%) people annually, injured 1,130 (10%) per year, and caused \$476 million in direct property damage (7%) per year.<sup>1</sup>

Further, according to a 2008 NFPA report<sup>2</sup>, between the years of 2003-2006, hospital emergency rooms saw an estimated average of 1,190 thermal burns per year caused by ignitions associated with home medical oxygen use. The heat source in 73% of these cases were smoking materials. During 2002-2005, oxygen administration equipment was involved in an average of 182 home fires reported to local fire departments per year. These fires caused an average of 46 civilian deaths and 60 civilian injuries per year.<sup>3</sup>

In 2003, U.S. states began requiring that all cigarettes sold must be “fire-safe,” that is, have sharply reduced ignition strength (ability to start fires), as determined by ASTM Standard E2187, *Standard Test Method for Measuring the Ignition Strength of Cigarettes*. By 2010, reduced ignition propensity (RIP) cigarette legislation was in effect in 47 states. From 2003 to 2010, the number of civilian deaths in smoking-material fires fell by an average of 21 percent. In 2012, the law became effective in all 50 states. In addition, fire safety professionals have been trying to educate about the dangers of smoking on oxygen. However, despite efforts to reduce cigarette fires, we are coming up short. More information is needed to help inform and develop future prevention initiatives.

### Research Goal

The aim of this work is to gather relevant information and data on cigarette fires in the US so it can be used as the basis for initiatives to further reduce cigarette fires.

The key research questions are:

- Have states (or others) been certifying that commercial cigarettes meet the ASTM standard? Has this information been made publicly available?
- Have changes in manufacturing of the paper substrate used in the ASTM test method changed the effectiveness of the current cigarettes?
- How can the standard test be improved to further reduce the risk of cigarette ignition?
- Are there recent domestic or international patents that address reduction of cigarette flammability?

<sup>1</sup> Ahrens, Marty. Home Fires Started by Smoking. National Fire Protection Association (NFPA). January 2019.

<sup>2</sup> Ahrens, Marty. Fires and Burns Involving Home Medical Oxygen. National Fire Protection Association (NFPA). August 2008.

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- What part of the smoking fire problem is due to cigarettes?
- Is cannabis exacerbating the smoking fire problem?
- How have smoking rates changed since the regulations went into effect (total number of cigarettes consumed, average and standard deviation per person)?
- How does the international cigarette fire loss problem compare to the USA?
- Are there databases besides the National Fire Incident Reporting System (NFIRS) that are useful to evaluate the cigarette fire problem?
- Have biases been documented in NFIRS cigarette fire incident reporting? Could this be addressed by pilot programs or in-depth studies?
- What mitigations are available to help prevent fires while smoking on home medical oxygen?
- Are any of these mitigations required to be tested per a product test standard? Or are there any product test standards available that could be applied to these technologies?

To answer these key research questions, the project includes the following objectives:

- Analyze available data in the US and internationally via NFIRS and any other databases and sources of data
- Investigate state regulations and enforcement related to RIP cigarettes
- Explore any research that has been completed on RIP cigarettes
- Explore available mitigations for preventing fires for those smoking while on home medical oxygen and identify any relevant product test standards for these technologies
- Host a stakeholder workshop to get further input on these key questions that will include researchers, enforcers, fire service, public educators, cigarette industry representation, and codes and standards developers

### Research sponsored by

This work is being performed under the following financial assistance award 60NANB22D149 from U.S. Department of Commerce, National Institute of Standards and Technology.

### Project Tasks

This research project, with technical oversight from the project technical panel, will involve the following tasks:

#### Task 1: Project Management and Technical Panel Administration

This task is the responsibility of the Fire Protection Research Foundation and refers to the management of the activities of the project and communications with the panel. The Foundation will form a Project Technical Panel of at least ten representatives at the initiation of the project and will be comprised of key stakeholder representatives and subject matter experts. The panel will guide the research throughout the project, including project planning; study details requiring guidance during the project; and outcomes and draft reports.

#### Task 2: Update of NFPA report "Fires and Burns Involving Home Medical Oxygen"

This task is the responsibility of the NFPA Research group and is an update the 2008 report "Fires and Burns Involving Home Medical Oxygen." NFPA Research will develop a draft report based on current statistics, which will be reviewed by the project technical panel before finalizing and being published on NFPA's website.



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### Task 3: Information Collection and Development of Baseline Materials

Task 3 is the responsibility of the contractor and involves the following subtasks:

**Task 3a Literature Review:** Carry out a literature review of the relevant information and data on this topic including:

- Data available on cigarette fires in the United States from NFPA and others
- Any available data on cigarette fires internationally that could be used as a comparison
- Data on smoking rates in the United States
- Summary of state regulations related to RIP cigarettes and how they are enforced
- Research related to the topic of cigarette fires and RIP cigarettes
- Information related to mitigations for preventing fires for those smoking while on home medical oxygen and any relevant test standards for these technologies

**Task 3b Fire Scenario Development:** Using the data and information gathered in Task 3a, develop a summary of representative cigarette fire scenarios. This should consider relevant information such as where it happened, when it happened, and who was injured/killed. Identify any trends, if possible.

**Task 3c Knowledge Gaps:** Present the knowledge gaps and identify any needed research or missing data that would help inform initiatives to reduce cigarette fires. A draft report will be developed that summarizes the findings from Task 3 for Panel consideration before the workshop (next task).

### Task 4 Stakeholder Workshop

Contractor will present the draft project deliverables for consideration and review at a stakeholder workshop that includes researchers, enforcers, fire service, public educators, cigarette industry representation, and codes and standards developers.

The Foundation will lead this effort to plan, implement, and document a workshop with stakeholders to review the draft content, try to fill in some of the knowledge gaps, and develop some recommendations for initiatives to reduce cigarette fires. This meeting will take place in-person and will bring together the project advisory panel and additional stakeholders to review and provide direct feedback on the draft project deliverables. The workshop proceedings will be developed by the Foundation. Attendance at the workshop is targeted to be at least forty participants.

### Task 5 Finalize Project Deliverables

Based on the feedback and guidance from the workshop, the contractor will revise the baseline information in the report and update with recommendations for initiatives to reduce cigarette fires. This material will be reviewed by the advisory panel.

### Task 6 Final Reporting and Outreach

Any final revisions resulting from the review by the advisory panel in Task 5 will be reflected in the final report. Project team will also present the findings from the research at a relevant stakeholder conference (e.g. NFPA Conference).



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### Deliverables

- Draft report with baseline information
- Presentation at the project workshop
- Final report with recommendations for initiatives
- At least one presentation at a relevant stakeholder meeting or conference (e.g. NFPA Conference)

### Schedule and Implementation

This research project is led by the Fire Protection Research Foundation and will be conducted in accordance with the "[Research Foundation Policies for the Conduct of Research Projects](#)". The project will be guided by a Project Technical Panel who will provide input to the project, recommend contractor selection, review periodic reports of progress and research results, and review the final project report. At a minimum, three Panel meetings will be held: project kick-off, review of interim report, and review of draft final report. The Foundation will provide documentation of all Panel meetings. In addition to the panel meetings, there will be one in-person workshop associated with this project.

### Intellectual Property

The Research Foundation will retain rights to all project deliverables including, the project report, which will be published on the Foundation website. The project deliverables may also include data collected over the course of the project.

### Schedule and Costs

This is a fixed price project in the amount of \$35,000. All indirect and travel costs incurred are intended to be included within this fixed price. The Foundation does not have a limit on indirect costs, but the total proposal cannot exceed this fixed price. Proposals for this project shall include a breakdown of costs by task.

The proposed schedule is provided in the table below. Suggested modifications to the proposed schedule can be provided with substantiation.

Tasks	Deliverable Timeline	Estimated Dates
Proposals due		19 May 2023
Selection of Contractor		2 June 2023
Interim Report	8 weeks from project initiation	28 July 2023
Workshop	13 weeks from project initiation	31 August 2023
Draft Final Report	15 weeks from project initiation	15 September 2023
Final Report	17 weeks from project initiation	29 September 2023

### How to Respond

Letter proposals shall be submitted electronically to Amanda Kimball, Executive Director, of the Foundation, at [akimball@nfpa.org](mailto:akimball@nfpa.org) no later than 5:00 pm Eastern time 19 May 2023. For additional details see the "[Research Foundation Policies for the Conduct of Research Projects](#)", the "[Foundation Operating Principles](#)", and "[Research Project Guidelines for Contractors](#)" on the Foundation website at: <https://www.nfpa.org/foundation>.

Each proposal shall include a description of the following weighted evaluation criteria: problem understanding (30%), technical merit (include scope and approach) (30%), and prior relevant experience and personnel expertise (30%). An additional criterion, current level of active foundation engagement, will be considered as the remaining 10% weighted



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evaluation criteria. For more information on the criteria, please refer to the "[Research Foundation Policies for the Conduct of Research Projects](#)"

Please note, the body of the research proposal submittals shall not exceed six pages in length, including a short bio of the proposed personnel and not including the cover page. Any additional relevant information (e.g., Project participants' CVs or resumes, letters of support, detailed description of past relevant experience, detailed description of RFP-Respondent's organizational facilities, competencies, other capabilities, and references) not covered in the body of the proposal should be appended to the proposal, with a maximum combined page limit of 12 pages, including the body of the proposal and appendices.

Additionally, all bidders must submit a completed [disclosure statement](#) with the proposal (this does not count towards the page limit). This form can be downloaded [here](#).

**Note:** This project will proceed only on the basis of receipt of a proposal deemed acceptable to the Foundation and the project sponsor(s). Information on the Foundation's policies for the conduct of research can be found on our [website](#). Services received are subject to our [standard contractual terms](#).